APPLE (*Malus domestica* 'Golden Delicious')
Apple scab; *Venturia inaequalis*
Powdery mildew; *Podosphaera leucotricha*
Cedar-apple rust; *Gymnosporangium juniperi-virginianae*
Sooty blotch; fungal disease complex
Flyspeck; *Zygophilia jamaicensis*
Rots; *Colletotrichum* spp., *Botryosphaeria* spp.

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EVALUATION OF CALCIUM CHLORIDE FOR APPLE DISEASE CONTROL, 1994-1997: Calcium chloride was evaluated for disease control in a 14-yr-old research orchard spaced 16 x 24 ft. The test was conducted in a randomized block design with 3 single-tree replications per treatment. Treatments were applied from both sides of the row with a Swanson model DA-500 airblast sprayer (100 gal/A). Application timing was based on growth stage as follows: half-inch green (HG), tight cluster (TC), pink (P), bloom, petal fall, and subsequent cover sprays (5C to 7C depending on the year). Maintenance sprays applied separately with the same equipment included: Guthion 50W, Provado 1.6F, Penncap-M, and Agrimycin 17W. Percentage incidence of leaf scab, cedar-apple rust and powdery mildew were determined from 10 terminals per tree in mid-June of each year. Leaf scab was determined again just prior to harvest. Fruit disease data are based on percentage of fruit with symptoms from 300 fruit per treatment harvested in mid-September of each year. Rot incidence was determined after incubation of fruit for 3 wk at 22 C.

Calcium chloride reduced apple scab leaf infection by about 50% in 1994 and 1995, when it was used alone in full season programs. Incidence of cedar-apple rust and powdery mildew were comparable to the fungicide treatment in 1994 and 1995; although, reduced rust and mildew relative to the insecticide-only treatment was observed only in 1995. Leaf scab at harvest was reduced by calcium chloride in all 3 years; although, calcium chloride treatments exhibited more leaf scab at harvest than the fungicide treatment. Calcium chloride had no effect on incidence of sooty blotch in 2 of 3 years; however, severity of sooty blotch was reduced in all 3 years (data not shown). Similarly, flyspeck incidence was not affected by calcium chloride, although severity was reduced in all 3 years (data not shown). Rot incidence was reduced by calcium chloride in 1994 and 1997, but not in 1995, which was a very favorable year for disease development. White rot was observed most frequently, followed by bitter rot. Incidence of black rot was negligible.

Treatment and product rate per acre	Timing	Mid-June leaf assessment		
		Leaf scab	Cedar-apple rust	Powdery mildew
1994				
Nova 40W 4.5 oz + Dithane DF 3 lb. Ziram 76WDG 3 lb. + Topsin-M 85WDG 8.0 oz.....	P-2C 3C-7C	1.5 c*	0.1 a	0.1 b
Calcium chloride 74-77% flake 6 lb. + Nufilm 17 16 oz...	P-7C	20.9 b	0.1 a	1.5 ab
Control - insecticide only.....		40.5 a	1.0 a	4.0 a
1995				
Nova 40W 4.5 oz + Dithane DF 3 lb. Ziram 76WDG 3 lb. + Topsin-M 85WDG 8.0 oz.....	P-1C 2C-5C	0.7 c	0.2 b	1.3 b
Calcium chloride 74-77% flake 6 lb. + Nufilm 17 8 oz.....	P-5C	24.4 b	2.0 b	2.2 b
Control - insecticide only.....		59.2 a	7.9 a	15.4 a
1997				
Vangard 75WG 0.32 lb. Vangard 75WG 0.19 lb. + Dithane DF 3 lb. Captan 50W 6 lb.....	GT-TC P-2C 3C-6C	0.9 c	0.2 b	0.8 a
Rubigan 1E 9 oz. + Dithane DF 3 lb. Calcium chloride 74-77% flake 6 lb. + Nufilm 17 8 oz.....	B-2C 3C-6C	3.1 b	0.3 b	0.2 a
Control - insecticide only.....		20.3 a	3.2 a	0 a

*All means separations based on analyses of arcsine-transformed percentages and Waller-Duncan k-ratio T test ($P \leq 0.05$).

Treatment and product rate per acre	Timing	Harvest (mid-September) Leaf scab	Fruit scab	Sooty blotch	Fly speck	Rots
1994						
Nova 40W 4.5 oz + Dithane DF 3 lb. Ziram 76WDG 3 lb. + Topsin-M 85WDG 8.0 oz.....	P-2C 3C-7C	0.3 c*	1.0 c	42.7 b	52.0 b	10.7 c
Calcium chloride 74-77% flake 6 lb. + Nufilm 17 16 oz.	P-7C	14.3 b	9.3 b	100.0 a	100.0 a	30.7 b
Control - insecticide only.....		39.0 a	18.7 a	100.0 a	100.0 a	53.3 a
1995						
Nova 40W 4.5 oz + Dithane DF 3 lb. Ziram 76WDG 3 lb. + Topsin-M 85WDG 8.0 oz.....	P-1C 2C-5C	16.1 c	6.7 b	4.8 b	61.9 b	14.3 b
Calcium chloride 74-77% flake 6 lb. + Nufilm 17 8 oz...	P-5C	29.6 b	71.4 a	92.4 a	99.0 a	42.9 a
Control - insecticide only.....		55.6 a	81.9 a	92.4 a	100.0 a	43.8 a
1997						
Vangard 75WG 0.32 lb. Vangard 75WG 0.19 lb. + Dithane DF 3 lb. Captan 50W 6 lb.....	GT-TC P-2C 3C-6C	1.1 b	0 b	1.3 c	26.7 b	4.7 b
Rubigan 1E 9 oz. + Dithane DF 3 lb. Calcium chloride 74-77% flake 6 lb. + Nufilm 17 8 oz...	B-2C 3C-6C	3.2 b	0 b	34.7 b	93.3 a	2.0 c
Control - insecticide only.....		19.6 a	23.3 a	61.3 a	96.7 a	20.7 a

*All means separations based on analyses of arcsine-transformed percentages and Waller-Duncan k-ratio T test ($P \leq 0.05$).